

Amendments to the Claims:

This listing of claims will replace all prior version, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for aligning a plurality of optical elements in an optical device, comprising the steps of:

- (a) placing at least a first optical element in a first beam path;
- (b) fixing the first optical element in place without substantially compensating for errors in optical alignment;
- (c) placing at least a first optical alignment element (OAE) in the first beam path; and
- (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path, wherein the first OAE comprises two ~~physically joined coupled~~, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the ~~physically joined coupled~~, non-parallel, and non-co-planar surfaces include a reflective element.

2. (Currently Amended) The method of claim 1, wherein the first OAE comprises ~~the two physically joined coupled~~, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the surfaces comprises a refractive or defractive element.

3. (Currently Amended) The method of claim 1, wherein the first OAE comprises ~~the two physically joined coupled~~, non-parallel, and non-co-planar surfaces ~~in the first beam~~

path, wherein each of the two of the coupled, non-parallel, and non-co-planar surfaces include a reflective element in the first beam path.

4. (Original) The method of claim 1, wherein the first optical element comprises one of the following:

- a lens;
- a mirror;
- a collimator;
- a laser;
- a detector;
- an optical fiber;
- a fiber collimator;
- a light emitting diode;
- a holographic element;
- an optical signal modulator;
- a thermoelectrically cooled laser
- a grating; and
- an array of optical devices.

5. (Original) The method of claim 1, wherein the first optical element is a first filter.

6. (Original) The method of claim 4, wherein the first filter is a first reflective notch filter.

7. (Original) The method of claim 1, further comprising:
 - (a1) placing at least a second optical element in a second beam path;
 - (b1) fixing the second optical element in place without substantially compensating for errors in optical alignment;
 - (c1) placing at least a second OAE in the second beam path; and
 - (d1) aligning the second beam path to a second desired beam path by adjusting the second OAE, wherein the alignment of the second beam path substantially compensates for cumulative alignment errors in the second beam path.
8. (Original) The method of claim 7, wherein the second optical element comprises a second filter.
9. (Original) The method of claim 8, wherein the second filter is a second reflective notch filter.
10. (Original) The method of claim 7, further comprising:
 - (a2) placing at least a third optical element in a third beam path;
 - (b2) fixing the third optical element in place without substantially compensating for errors in optical alignment;
 - (c2) placing at least a third OAE in the third beam path; and
 - (d2) aligning the third beam path to a third desired beam path by adjusting the third OAE, wherein the alignment of the third beam path substantially compensates for cumulative alignment errors in the third beam path.

11. (Original) The method of claim 9, wherein the third optical element comprises a third filter.

12. (Original) The method of claim 11, wherein the third filter is a third reflective notch filter.

13. (Original) The method of claim 10, further comprising:

(a3) placing at least a fourth optical element in a fourth beam path;

(b3) fixing the fourth optical element in place without substantially compensating for errors in optical alignment;

(c3) placing at least a fourth OAE in the fourth beam path; and

(d3) aligning the fourth beam path to a fourth desired beam path by adjusting the fourth OAE, wherein the alignment of the fourth beam path substantially compensates for cumulative alignment errors in the fourth beam path.

14. (Original) The method of claim 13, wherein the fourth optical element comprises a fourth filter.

15. (Original) The method of claim 14, wherein the fourth filter is a fourth reflective notch filter.

16. (Original) The method of claim 1, wherein the adjusting step (d) comprises:

(d1) selecting values for a plurality of parameters;

(d2) adjusting a placement and an orientation of the first OAE in the first beam path

along a plurality of axes;

(d3) determining a power level for the first beam path at a location; and

(d4) repeating steps (d2) and (d3) if the power level for the first beam path is not approximately a desired power level.

17. (Original) The method of claim 16, further comprising:

(d2i) adjusting a placement and an orientation of a second OAE in a second beam path along the plurality of axes;

(d3i) determining a power level for the second beam path at the location; and

(d4i) repeating steps (d2i) and (d3i) if the power level for the second beam path is not approximately a desired power level.

18. (Original) The method of claim 17, further comprising:

(d2ii) adjusting a placement and an orientation of a third OAE in a third beam path along the plurality of axes;

(d3ii) determining a power level for the third beam path at the location; and

(d4ii) repeating steps (d2ii) and (d3ii) if the power level for the third beam path is not approximately a desired power level.

19. (Original) The method of claim 18, further comprising:

(d2iii) adjusting a placement and an orientation of a fourth OAE in a fourth beam path along the plurality of axes;

(d3iii) determining a power level for the fourth beam path at the location; and

(d4iii) repeating steps (d2iii) and (d3iii) if the power level for the fourth beam path is not

approximately a desired power level.

20. (Original) The method of claim 1, further comprising:

(e) fixing the first OAE in the first beam path in place.

21. (Original) The method of claim 20, wherein the fixing step (e) includes the use of epoxy.

22. (Original) The method of claim 20, wherein the fixing step (e) includes the use of welding.

23. (Original) The method of claim 20, wherein the fixing step (e) includes the use of soldering.

24. (Original) The method of claim 20, further comprising:

(e1) fixing a second OAE in a second beam path in place.

25. (Original) The method of claim 24, further comprising:

(e2) fixing a third OAE in a third beam path in place.

26. (Original) The method of claim 25, further comprising:

(e3) fixing a fourth OAE in a fourth beam path in place.

27. (Original) The method of claim 1, comprising:

placing a fifth optical element in the first beam path;

fixing the fifth optical element in place without substantially compensating for errors in optical alignment;

placing a sixth optical element in the first beam path; and

fixing the sixth optical element in place without substantially compensating for errors in optical alignment.

28. (Previously Amended) The method of claim 1, wherein:

the optical device includes a system conforming to an IEEE standard as of July 27, 2001.

29. (Previously Amended) The method of claim 1, wherein:

the optical device includes a system conforming to an IEEE 802 standard as of July 27, 2001.

30. (Previously Amended) The method of claim 1, wherein:

the optical device includes a system conforming to one or more of a XAUI, XENPAK and XGP transceiver standard as of July 27, 2001.

31. – 87. (Canceled)

88. (Currently Amended) A method for aligning a plurality of optical elements in an optical device, comprising the steps of:

(a) placing at least a first optical element in a first beam path;

(b) fixing the first optical element in place without substantially compensating for errors in optical alignment;

- (c) placing at least a first optical alignment element (OAE) in the first beam path; and
- (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path, wherein the first OAE comprises two physically joined coupled, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the physically joined coupled, non-parallel, and non-co-planar surfaces include a reflective element, wherein the first beam path input into the OAE is non-co-planar with the first beam path output from the OAE.

89. (Canceled)

90. (Currently Amended) A method for aligning a plurality of optical elements in a multi-channel optical device, comprising the steps of:

- (a) placing at least a first optical element in a first beam path, wherein at least one of a plurality of channels traverse the first beam path;
- (b) fixing the first optical element in place without substantially compensating for errors in optical alignment;
- (c) placing at least a first optical alignment element (OAE) in the first beam path, wherein the first OAE comprises two physically joined, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the physically joined, non-parallel, and non-co-planar surfaces include a reflective element;
- (d) aligning the first beam path to a first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors in the first beam path;

(e) placing at least a second optical element in a second beam path, wherein at least another one of the plurality of channels traverse the second beam path;

(f) fixing the second optical element in place without substantially compensating for errors in optical alignment;

(g) placing at least a second OAE in the second beam path, ~~wherein the second OAE comprises two physically joined, non-parallel, and non-co-planar surfaces in the second beam path, wherein at least one of the physically joined, non-parallel, and non-co-planar surfaces include a reflective element;~~ and

(h) aligning the second beam path to a second desired beam path by adjusting the second OAE, wherein the alignment of the second beam path substantially compensates for cumulative alignment errors in the second beam path.

91. (New) A method for aligning a plurality of optical elements in a multi-channel optical device, comprising the steps of:

(a) placing an optical element within a hole in a housing of the device in a first beam path, wherein the housing comprises a top surface, a bottom surface, and a side surface, wherein the hole traverses the side surface;

(b) fixing the optical element to the housing within the hole without substantially compensating for errors in alignment to a first desired beam path, wherein the first desired beam path traverses from the optical element through a first bore in the housing, wherein the first bore traverses the bottom surface of the housing;

(c) placing a first filter in a first slot in the housing in the first beam path, wherein at least one of a plurality of channels traverse the first beam path, wherein the first slot traverses the bottom surface of the housing;

- (d) fixing the first filter to the housing within the first slot without substantially compensating for errors in alignment to the first desired beam path;
- (e) placing a first optical alignment element (OAE) in a first pocket in the housing in the first beam path, wherein the first pocket traverses the top surface of the housing;
- (f) aligning the first beam path to the first desired beam path by adjusting the first OAE, wherein the alignment of the first beam path substantially compensates for cumulative alignment errors of the optical element and the first filter, wherein the first OAE comprises two physically joined, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the physically joined, non-parallel, and non-co-planar surfaces includes a reflective element; and
- (g) fixing the first OAE to the housing within the first pocket.

92. (New) The method of claim 91, further comprising:

- (h) placing a second filter in a second slot in the housing in a second beam path, wherein at least another of the plurality of channels traverse the second beam path, wherein the second slot traverses the bottom surface of the housing;
- (i) fixing the second filter to the housing within the second slot without substantially compensating for errors in alignment to a second desired beam path, wherein the second desired beam path traverses from the optical element, through the first filter, through the second filter, and through a second bore in the housing, wherein the second bore traverses the top surface of the housing;
- (j) placing a second OAE in a second pocket in the housing in the second beam path, wherein the second pocket traverses the top surface of the housing;
- (k) aligning the second beam path to the second desired beam path by adjusting the

second OAE, wherein the alignment of the second beam path substantially compensates for cumulative alignment errors of the optical element, the first filter, and the second filter, wherein the second OAE comprises two physically joined, non-parallel, and non-co-planar surfaces in the first beam path, wherein at least one of the physically joined, non-parallel, and non-co-planar surfaces include a reflective element; and

- (g) fixing the second OAE to the housing within the second pocket.